

1. An internet protocol-based cellular telephone communications system, comprising:

- a router;
- a foreign agent, coupled to the router;
- a Base Transceiver Station (BTS), coupled to the router, for communicating with a mobile telephone within a transmission area associated with the BTS, wherein the router communicates with the BTS using a proprietary interface;

a home agent (HA), coupled to the router, the HA communicating with the router and the foreign agent for registering mobile telephones and transmitting messages through an internet-protocol network, wherein messages between the HA and the mobile telephone use an internet protocol between the HA and the router and the proprietary interface between the router and the BTS.

2. The cellular telephone communications system of claim 1, further comprising a second BTS, wherein a handoff between the BTS and the second BTS is performed through the internet protocol network.

"mobile IP"
terms

3. The cellular telephone communications system of claim 2, wherein a soft hand off (SHO) is performed between the BTS and the second BTS using asynchronous transfer mode (ATM) communications between the router and the BTS and the router and the second BTS.

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4. The cellular telephone system of claim 3, wherein the SHO is performed using ATM between the BTS and the second BTS and the mobile telephone.

5. The cellular telephone communications system of claim 1, wherein the HA directs a message to the mobile telephone using an internet protocol address.

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6. An internet protocol-based cellular telephone communications system, comprising:

a handoff server;

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a Base Transceiver Station (BTS), coupled to the handoff server, for communicating with a mobile telephone within a transmission area associated with the BTS, wherein the handoff server communicates with the BTS using a proprietary interface;

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a home agent (HA), coupled to the handoff server, the HA communicating with the handoff server for transmitting messages through an internet-protocol network, wherein messages between the HA and the mobile telephone use an internet protocol between the HA and the handoff server and the proprietary interface between the router and the BTS.

7. The cellular telephone communications system of claim 6, wherein the proprietary interface is asynchronous transfer mode (ATM).

8. The cellular telephone communications system of claim 6, wherein the BTS
5 communicates with the mobile telephone using asynchronous transfer mode (ATM).

9. The cellular telephone communications system of claim 6, wherein a handoff of a mobile telephone between the BTS and a second BTS within the cellular telephone communications system is handled through the handoff server.

10. The cellular telephone communications system of claim 9, wherein the mobile telephone communicates directly through the handoff server during the handoff between the BTS and the second BTS.

11. The cellular telephone communications system of claim 6, wherein a handoff
15 between the BTS and a second BTS is anchored through the first BTS until updates can be made at the HA.

for communicating
comprising:
from a home agent
message from the router
message from the BT
ons zone of the B

sending a message from a home agent (HA) to a router over an internet protocol based network;

5 forwarding the message from the router to a base transceiver station (BTS) using a
proprietary format; and

forwarding the message from the BTS to a mobile telephone that is within a geographical communications zone of the BTS.